

Notice of Allowability

Application No.

10/666,401

Examiner

Esaw T. Abraham

Applicant(s)

HASSNER ET AL.

Art Unit

2133

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to Amdt filed on 08/07/06.
2. ☒ The allowed claim(s) is/are 1-20.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

ALBERT DECADY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

DETAILED ACTION

Examiner's statement for reason for allowance

1. Claims 1-20 have been allowed.

The following is an examiner's statement for allowance:

As per claim 1:

The prior art of record, Sze (U.S. PN: 6,092,231) teaches a system for comparing any errors detected by an ECC unit with any errors detected by a CRC unit in a sector of bytes read from a disk in a disk drive. This system comprises an ECC unit, a CRC unit, a buffer unit and a disk drive controller and the ECC unit detects and corrects errors in the sector of bytes, the CRC unit checks the detected errors made by the error correction unit before the data in the sector is transmitted to a host computer and the CRC unit preferably receives the sector of bytes at the same time the ECC unit receives the sector of bytes. The buffer unit temporarily stores at least a portion of the sector of bytes read from the disk, and implements the corrections by the ECC unit to the sector of bytes. The disk drive controller controls the transmission of the sector of bytes from the buffer unit to the host computer and further discards (overlap) the current sector of bytes within the buffer unit and attempts another read operation of the same sector if the errors found by the CRC unit do not match the errors found by the ECC unit. Further, Cox et al. (U.S. PN: 5,946,328) teach methods and means for the detection and correction of multi-byte errors in long byte strings formatted into a two-level block code structure (see col. 1, lines 8-10). In addition, Cox et al. teach that the detection and correction of errors in linearly error correction encoded long byte strings, such as received from a communication system (see col.10, lines 31-35). However, the prior art taken singly or in combination fail to teach, anticipate, suggest, or

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render obvious a controller that corrects erroneous data bytes that are stored in a sector on a disk, wherein: the controller performs a first attempt to correct erroneous data bytes that are stored in a failed sector on the disk by decoding first level CRC and ECC bytes, if the first attempt to correct the erroneous data bytes is unsuccessful, the controller adds a long block membership (LBM) byte to the first level CRC and ECC bytes, the LBM byte indicating whether the failed sector is part of a long block that includes a plurality of sectors, the controller performs a second attempt to correct the erroneous data bytes by decoding second level ECC bytes, and if the second attempt to correct the data bytes is unsuccessful, the controller adds the LBM byte to the first level CRC and ECC bytes again and performs a third attempt to correct the erroneous data bytes by decoding the second level ECC bytes to generate corrected data bytes. Consequently, claim 1 allowed over the prior art.

Claims 2-10, which is/are directly or indirectly dependent/s of claim 1 are also allowable over the prior art of record.

As per claim 11:

The prior art of record, Sze (U.S. PN: 6,092,231) teaches a system for comparing any errors detected by an ECC unit with any errors detected by a CRC unit in a sector of bytes read from a disk in a disk drive. This system comprises an ECC unit, a CRC unit, a buffer unit and a disk drive controller and the ECC unit detects and corrects errors in the sector of bytes, the CRC unit checks the detected errors made by the error correction unit before the data in the sector is transmitted to a host computer and the CRC unit preferably receives the sector of bytes at the same time the ECC unit receives the sector of bytes. The buffer unit temporarily stores at least a portion of the sector of bytes read from the disk, and implements the corrections by the ECC unit

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to the sector of bytes. The disk drive controller controls the transmission of the sector of bytes from the buffer unit to the host computer and further discards (overlap) the current sector of bytes within the buffer unit and attempts another read operation of the same sector if the errors found by the CRC unit do not match the errors found by the ECC unit. Further, Cox et al. (U.S. PN: 5,946,328) teach methods and means for the detection and correction of multibyte errors in long byte strings formatted into a two-level block code structure (see col. 1, lines 8-10). In addition, Cox et al. teach that the detection and correction of errors in linearly error correction encoded long byte strings, such as received from a communication system (see col.10, lines 31-35). However, the prior art taken singly or in combination fail to teach, anticipate, suggest, or render obvious a disk drive system comprising: a controller that performs a first attempt to correct erroneous data bytes that are stored in a failed sector on a disk by decoding first level CRC and ECC bytes, Performs a second attempt to correct the erroneous data bytes by decoding second level ECC bytes if the first attempt is unsuccessful, and performs a third attempt to correct the erroneous data bytes by decoding the second level ECC bytes if the second attempt is unsuccessful, wherein the controller adds a long block membership (LBM) byte to the first level CRC and ECC bytes if the first attempt is unsuccessful, and the controller adds the LBM byte to the first level CRC and ECC bytes again if the second attempt is unsuccessful, the LBM byte indicating whether the failed sector is part of a long block that includes a plurality of sectors. Consequently, claim 11 allowed over the prior art.

Claims 12-20, which is/are directly or indirectly dependent/s of claim 11 are also allowable over the prior art of record.

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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

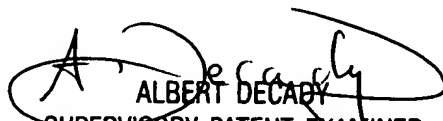
2. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Esaw Abraham whose telephone number is (571) 272-3812. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are successful, the examiner's supervisor, Albert DeCady can be reached on (571) 272-3819. The fax phone numbers for the organization where this application or proceeding is assigned (571) 273-8300.

Information regarding the status of an Application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or PUBLIC PAIR. Status information for unpublished applications is available through Private Pair only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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